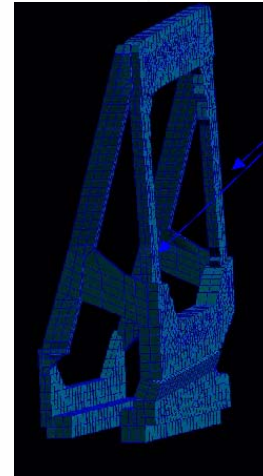
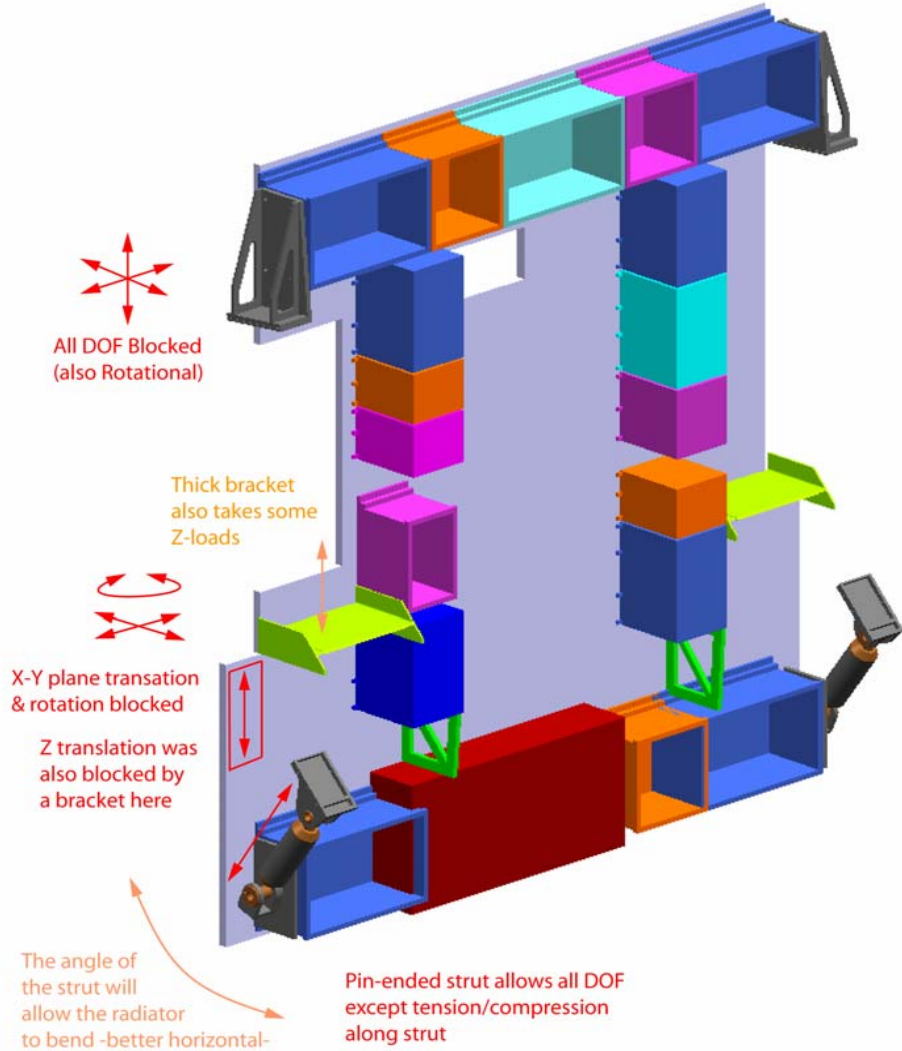
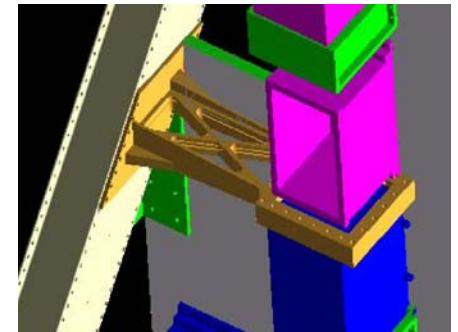


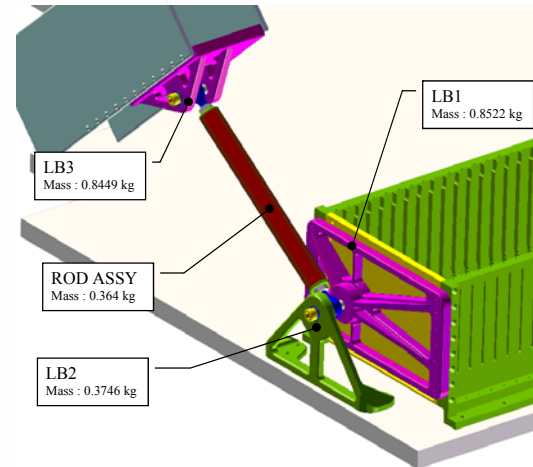
Current –or Close to Current Design



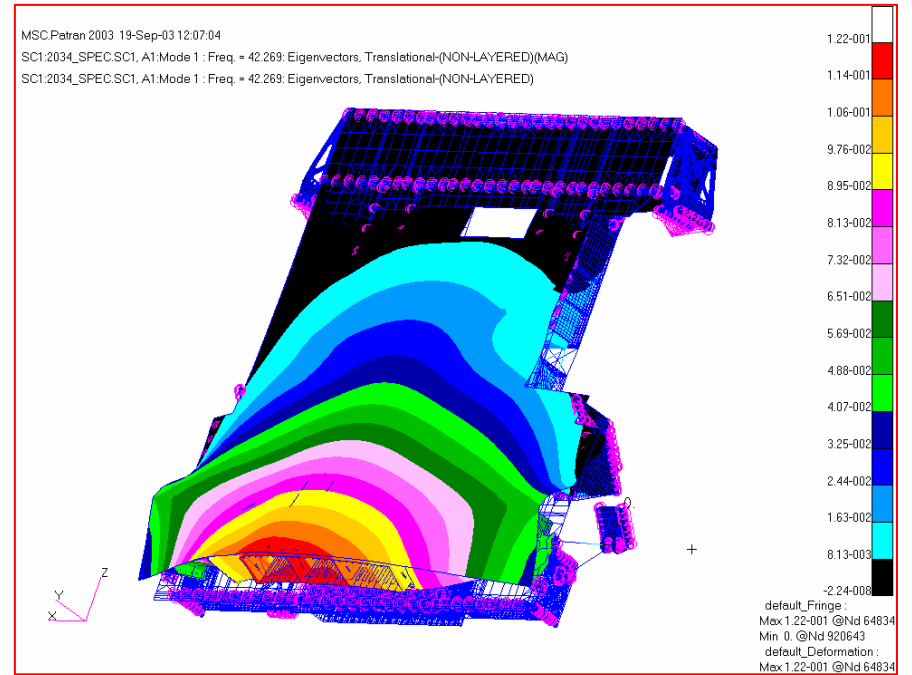
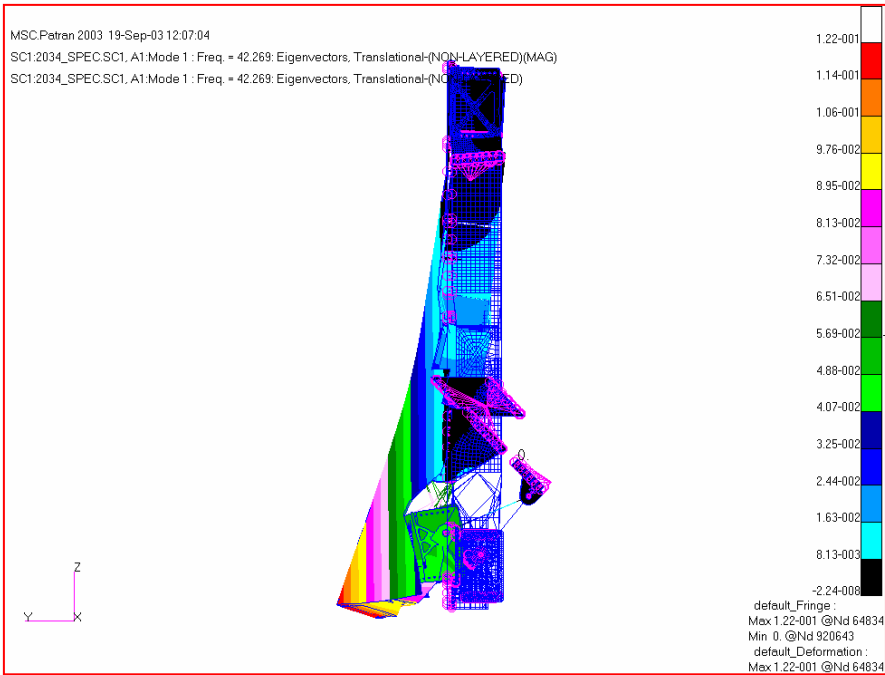
Top bracket



Mid Bracket

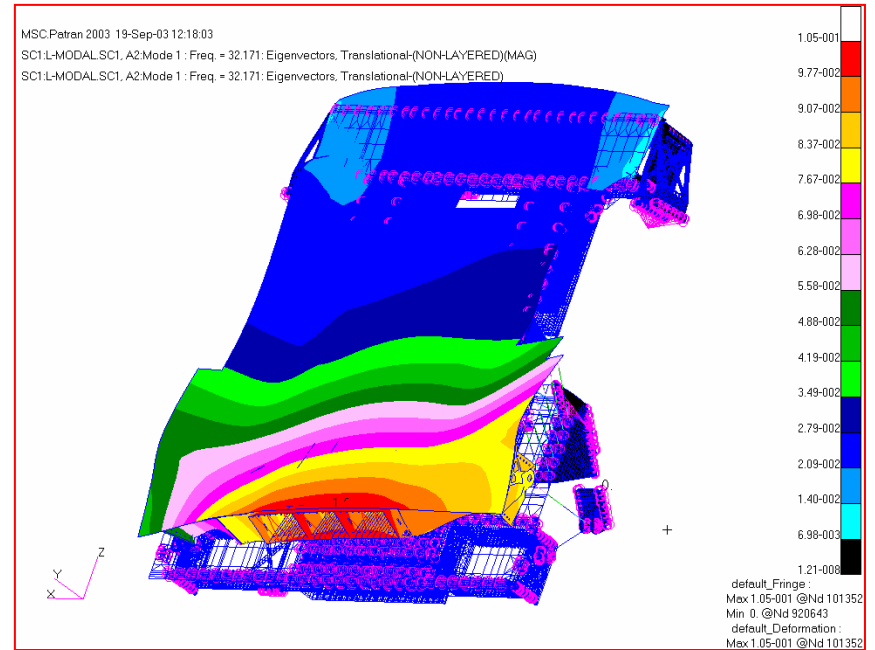
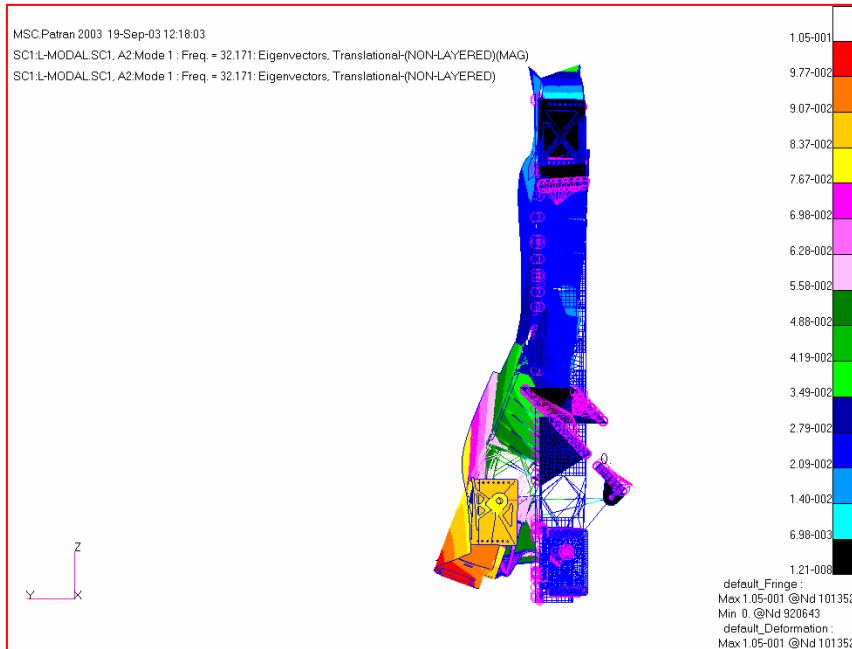


Lower Strut



Original FEM model

1st Mode shape 42.269HZ

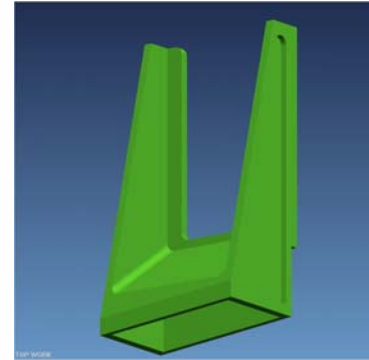
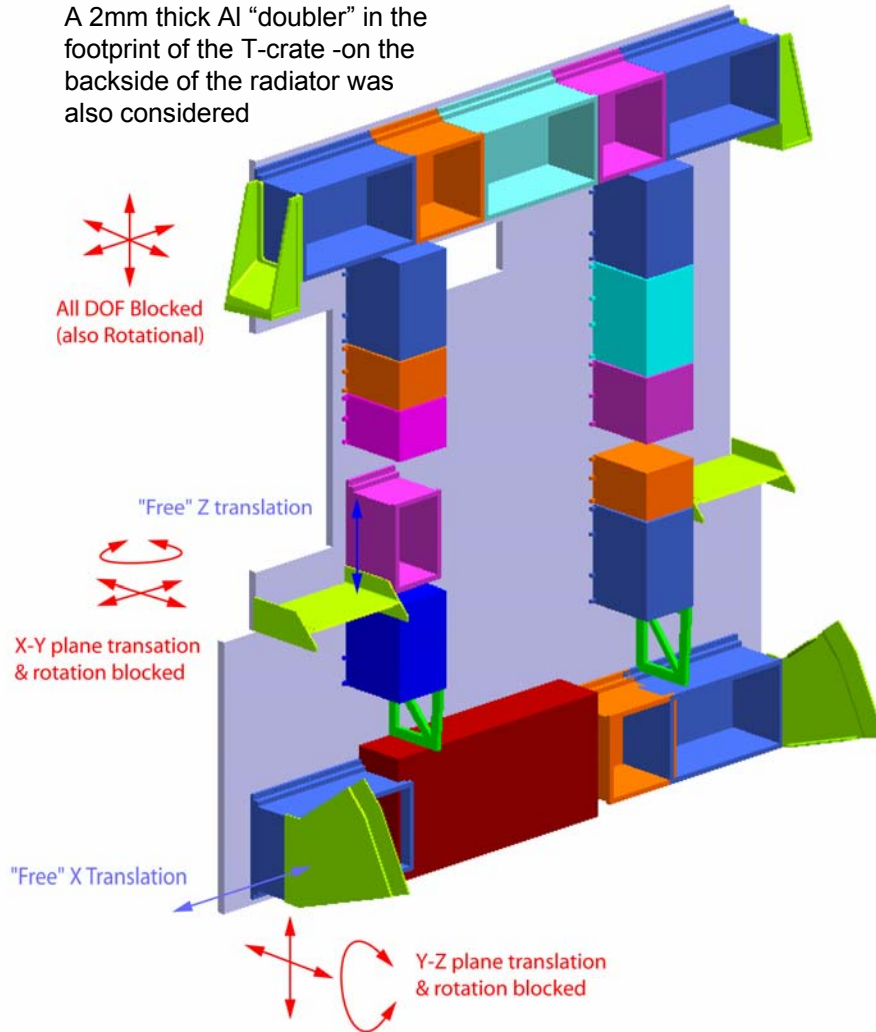


Original FEM model , without mid Z bracket

1st Mode shape 32.171HZ

CERN Design Idea

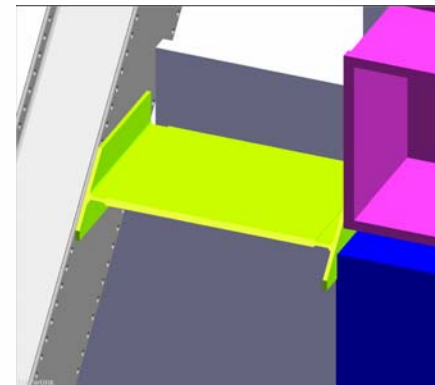
A 2mm thick Al "doubler" in the footprint of the T-crate -on the backside of the radiator was also considered



Top bracket

As shown:~2.1 Kg + bolts

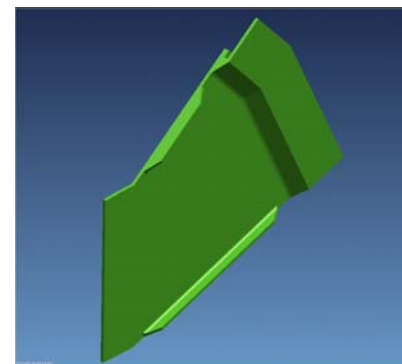
FEM results indicate a lighter option might be possible



Mid bracket

More detailed design in work

? Kg



Lower plate

As shown:

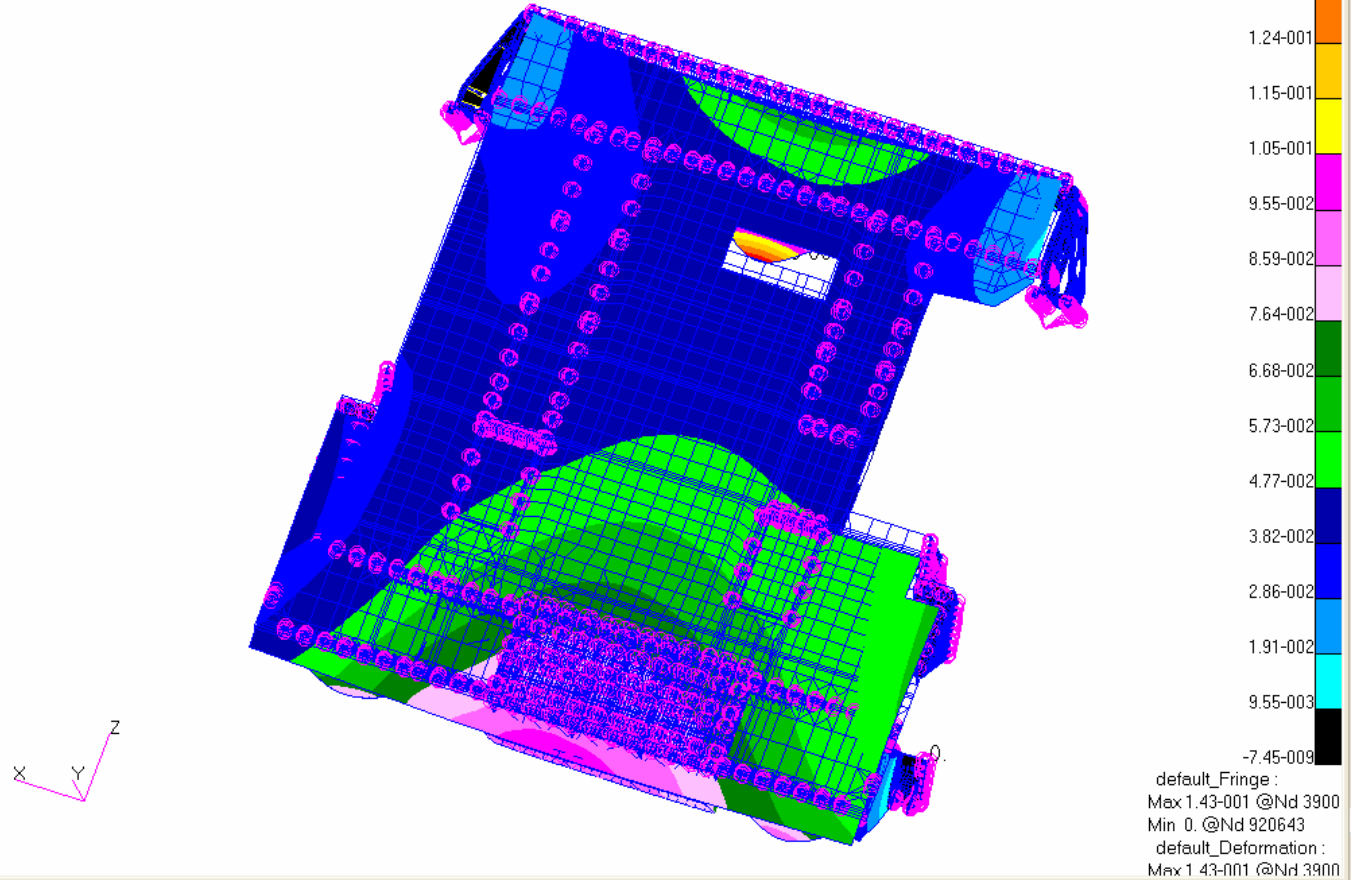
~2 Kg + bolts

All brackets need a more detailed design & more analysis!

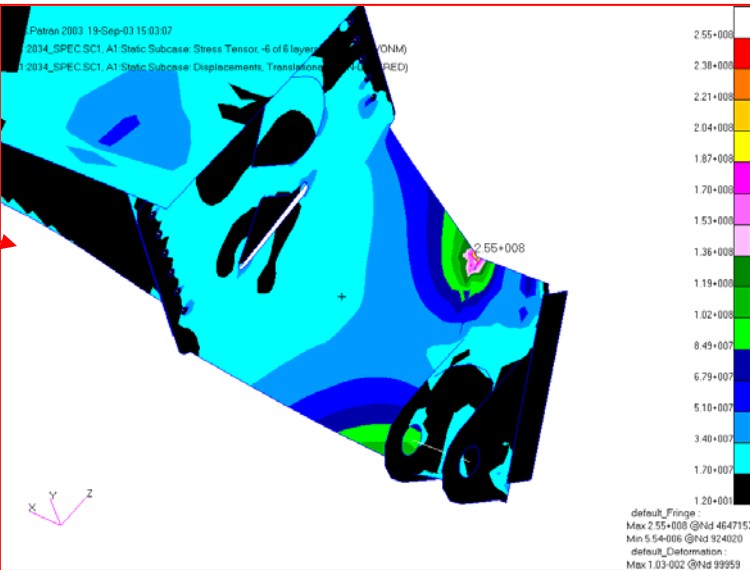
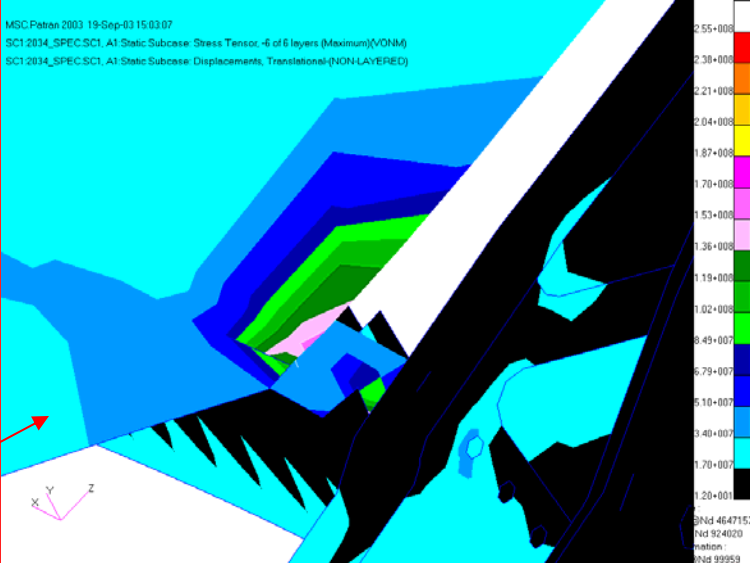
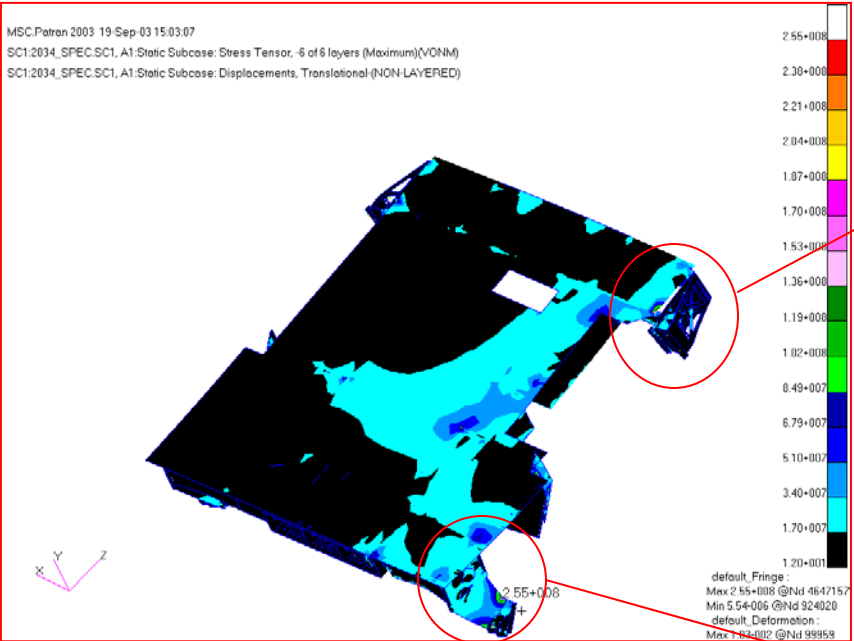
MSC.Patran 2003 19-Sep-03 14:49:47

SC1:2034_SPEC.SC1, A1:Mode 1 : Freq. = 52.258: Eigenvectors, Translational-(NON-LAYERED)(MAG)

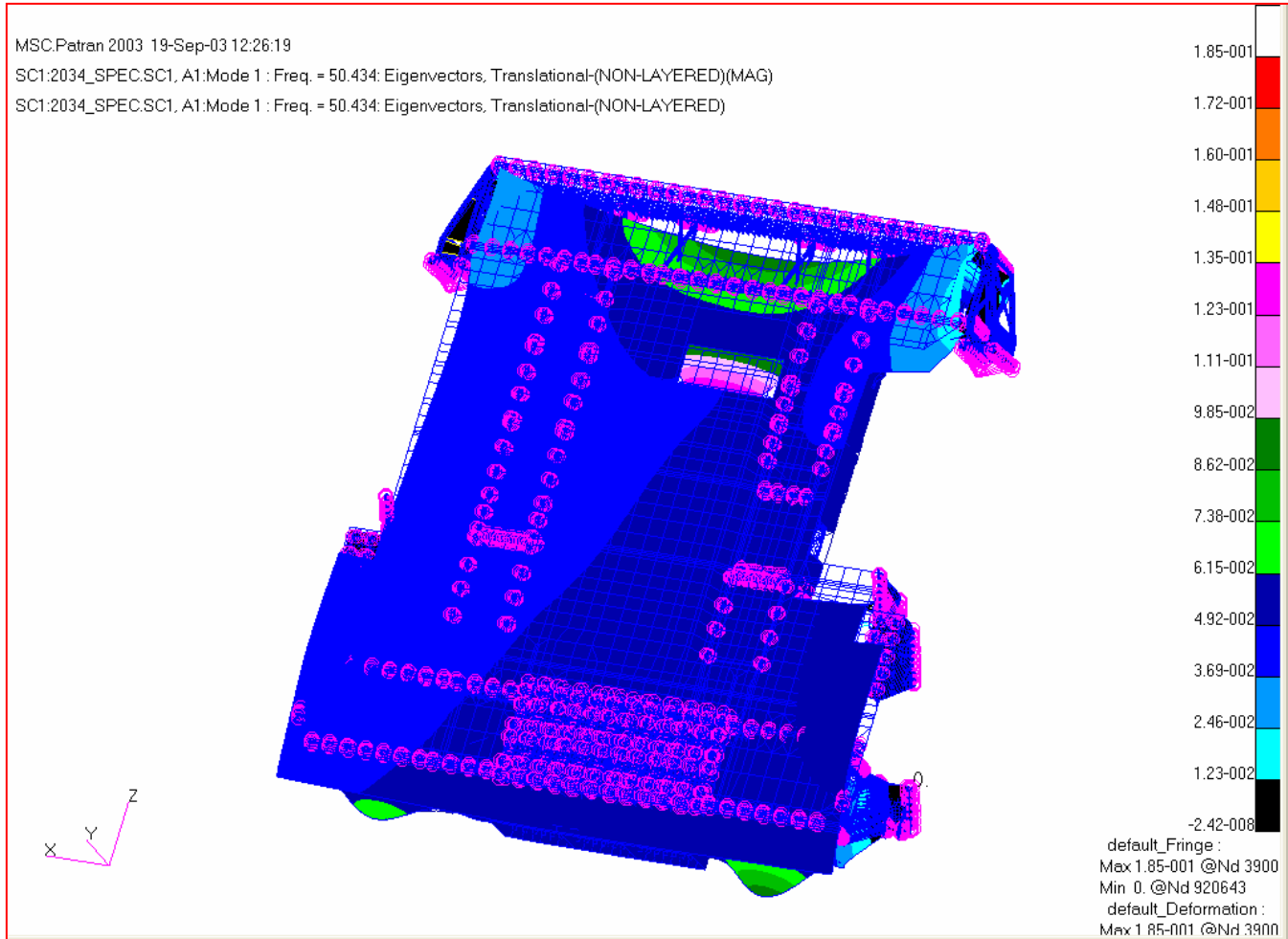
SC1:2034_SPEC.SC1, A1:Mode 1 : Freq. = 52.258: Eigenvectors, Translational-(NON-LAYERED)



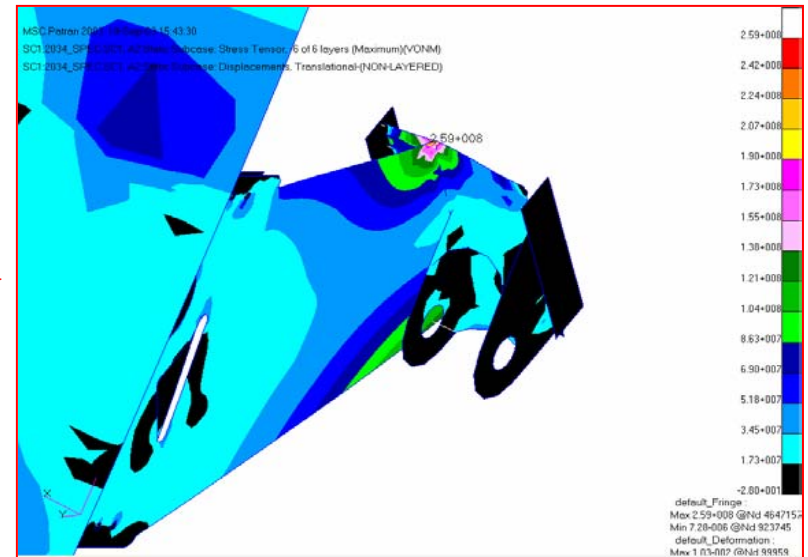
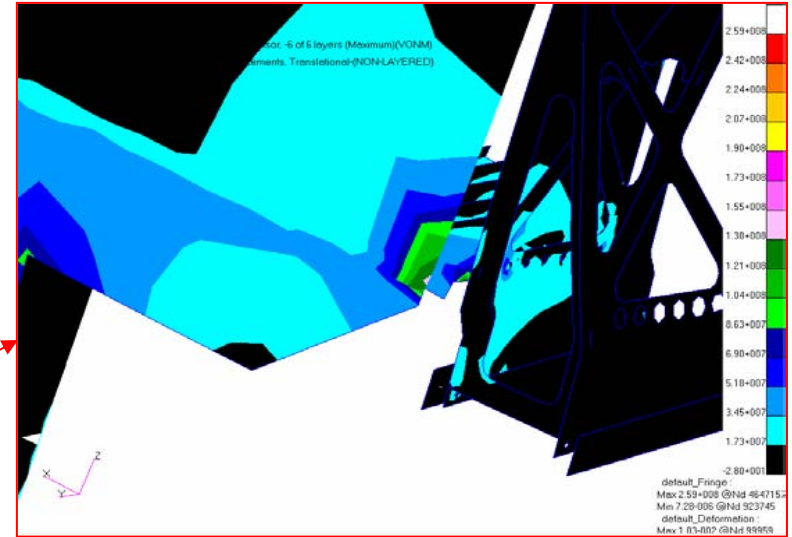
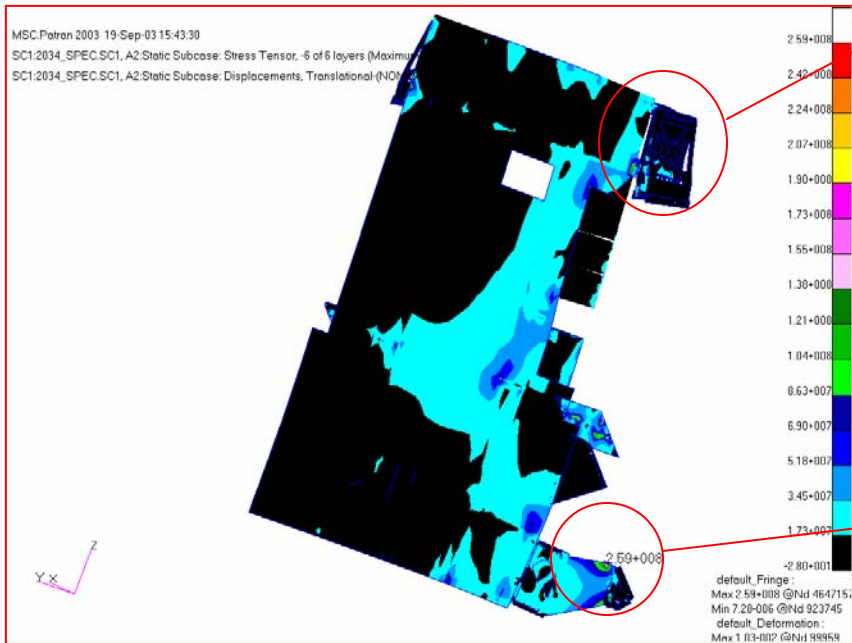
Option 1: top bracket, no change, radiator locally 2mm doubler
mid bracket, without Z bracket
bottom bracket, plate connection instead of rod
F1=52.258 Hz



Option 1: static load result
 LC 2034, V. Mises Stress 255MPa



Option 2: top bracket, one row bolts (save mass)
mid bracket, with out Z bracket
bottom bracket, plate connection
F1=50.434 Hz



Option 1: static load result

LC 2034, V. Mises Stress 259MPa